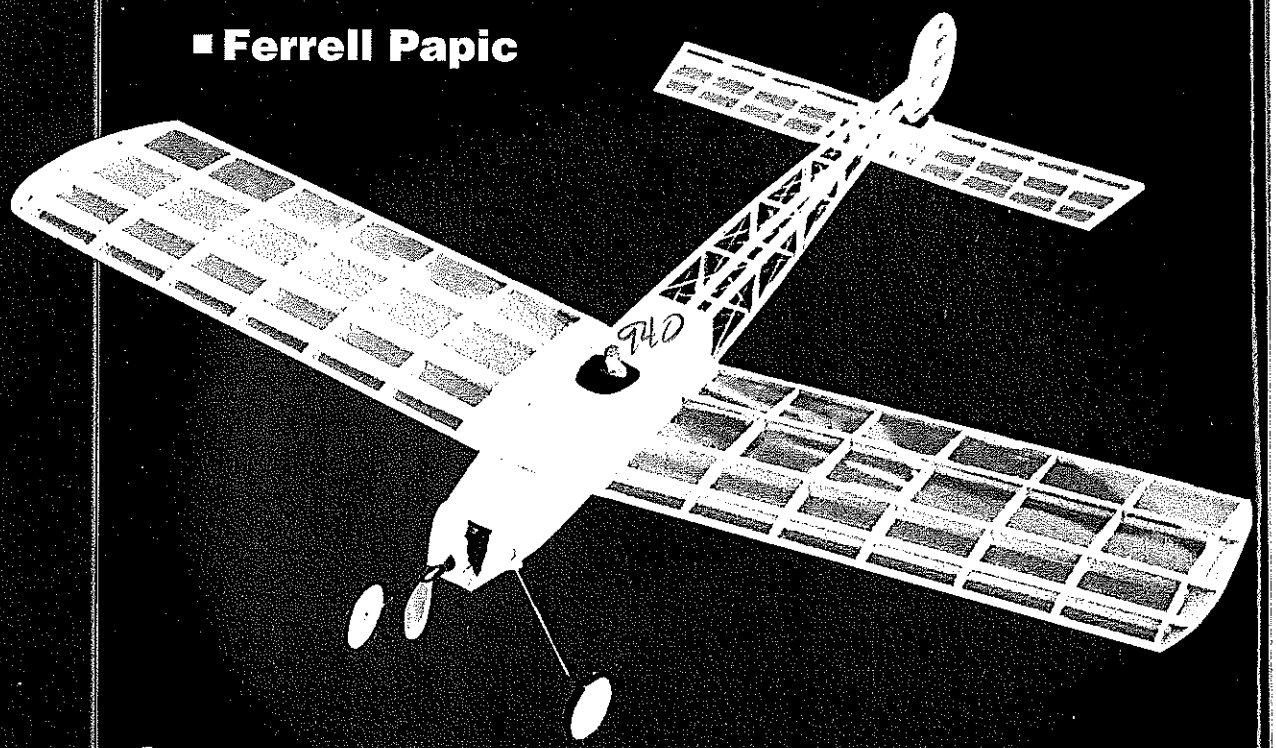
Cessna No. 1

■ Ferrell Papic

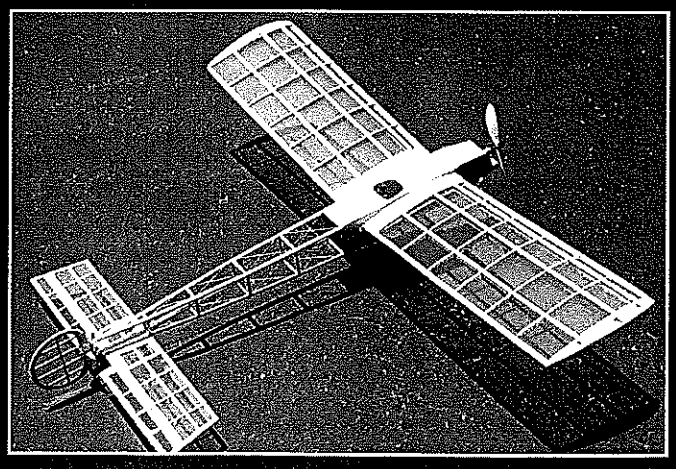


First Cessna design can be your first venture into the world of electric park flyers

CLYDE V. CESSNA built his first flying machine in 1910. His new airplane's airframe turned out to be aerodynamically stable and had an advanced design for its time. His first flights in the new aircraft were limited to short hops because of inadequate engine-cooling technology which caused the Elbridge engine that he used in his craft to overheat.

A few years later Mr. Cessna's sons went to fight in World War I. Having seen great advances and changes in aircraft design and capability, the boys came home from war with the desire and knowledge to build the Cessna Aircraft Company into a thriving business.

To make a more robust Radio Control (RC) flying model that would not shed bits and pieces in normal flying conditions, I have dispensed with some of the finer details of the Cessna aircraft. A rubber-band-retained swing-arm landing gear saves a great deal of wear and tear on the model. The bent-wire steering tail gear is a useful feature not found on the original Cessna No. 1. The long tail moment and generous stabilizer makes the Cessna a forgiving craft to fly.



Don't let this airplane's open-framework fuselage construction scare you; this one is easy to build!

CONSTRUCTION

Wing: Because of dispensing with king posts and wing-bracing wires, I made the undercambered wing a three 1/16 balsa spar system with a 1/16 balsa shear web on the center spar.

The tops of the wingtips are capped and sanded to shape with 1/16 balsa. The tip caps give the wing covering material something to hold on to. The wing rib pattern is

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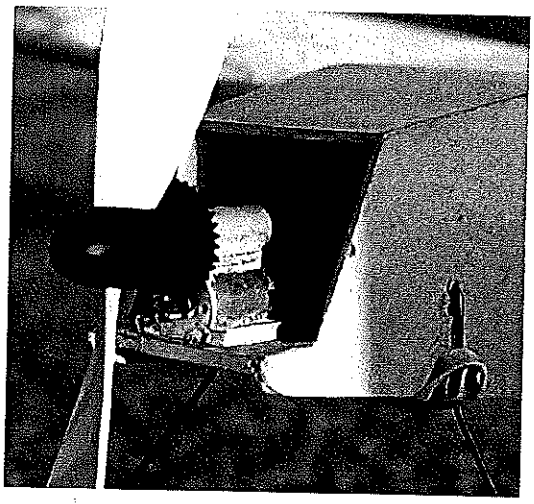
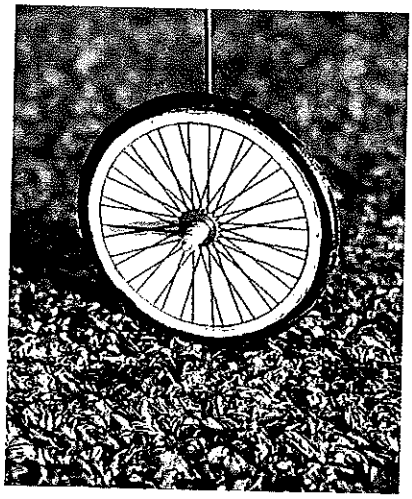
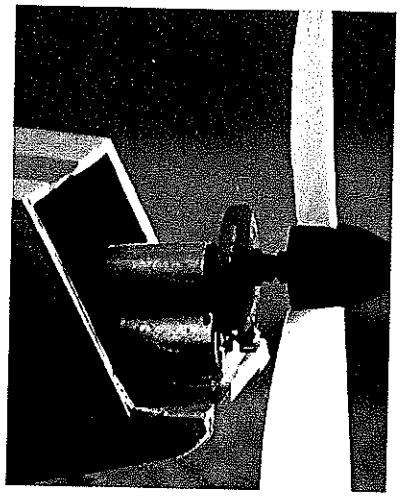


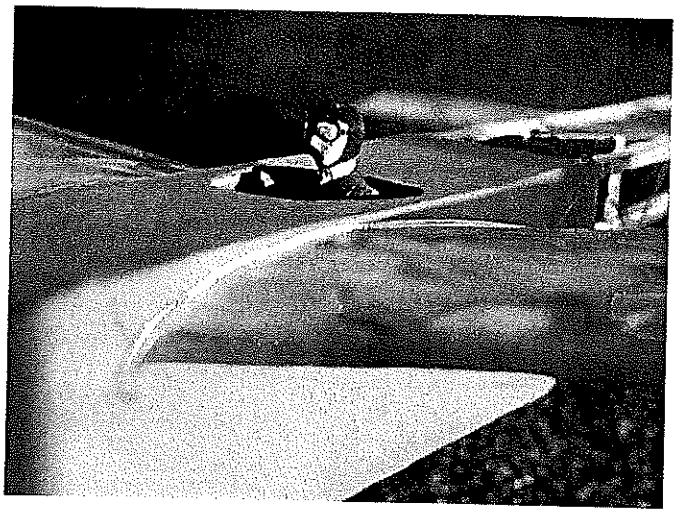
This is the scratch-built ball-bearing gearbox and motor option.



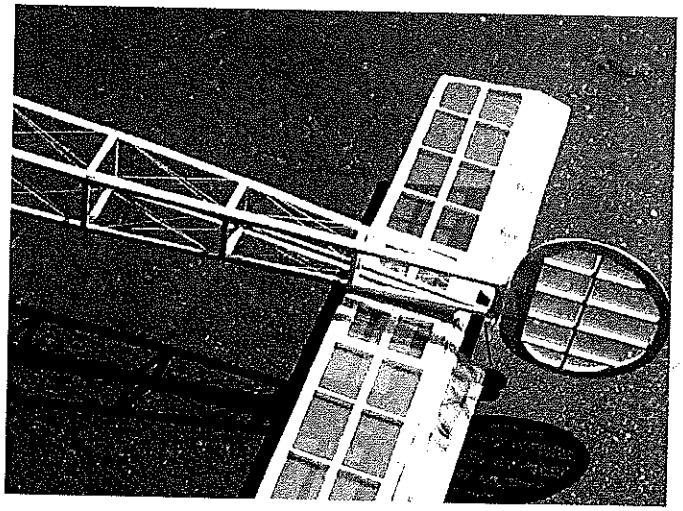
The simulated wire wheels are a simple and effective detail.



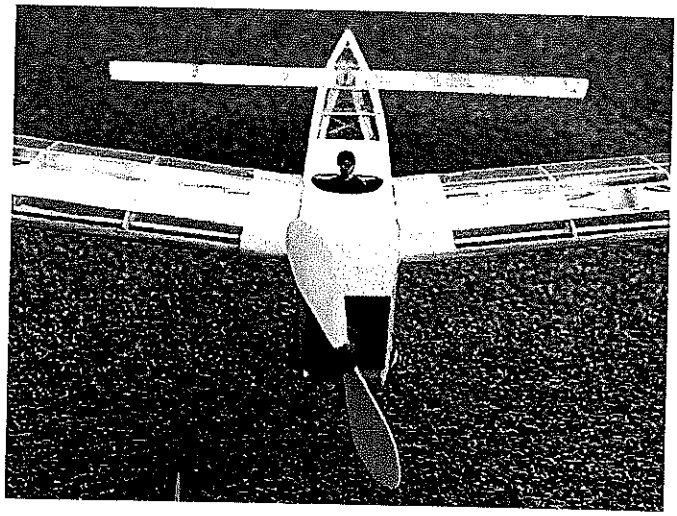
Another view of the motor, which has simple and accessible mounting.



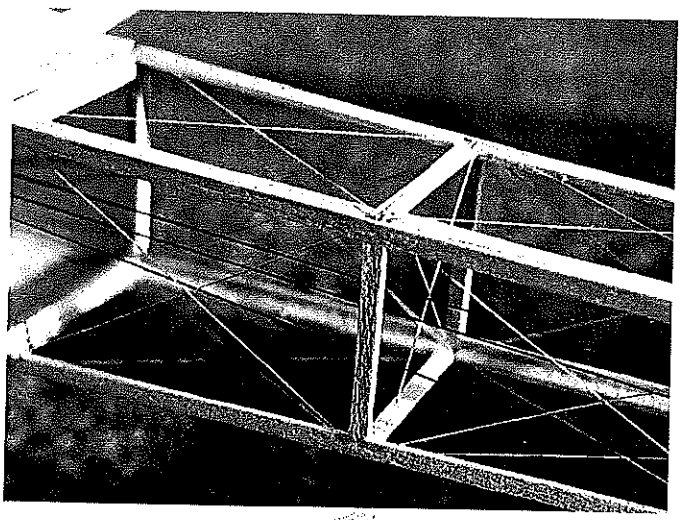
Text explains how to make this scalelike pilot with goggles.



The Cessna's rudder is hinged to the rear of the fuselage structure; there is no fin. The structure is minimal.

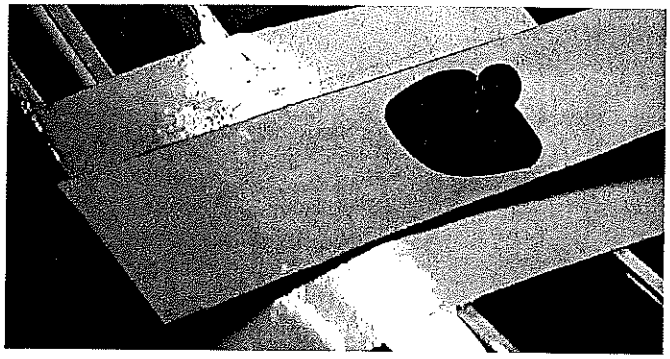


This front view of the model shows the open-bay fuselage to good effect. There is plenty of motor-cooling here.

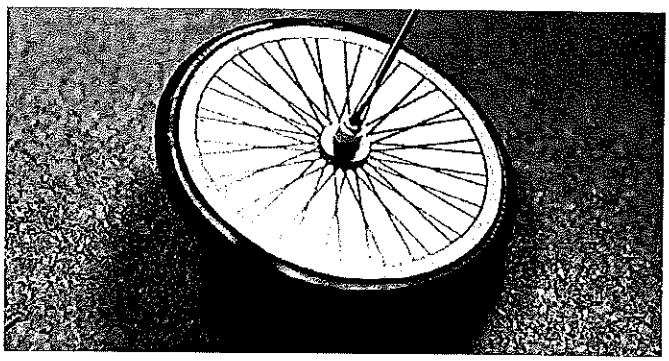


The scalelike thread bracing adds to the old-time effect. It's not difficult, but it adds a great deal of scale appeal.

Photos courtesy the author Graphic Design by Carla kunz



Cover the wing center-section with heavy paper using a light application of yellow carpenter's glue.



You can make wheels with rubber O-rings, balsa plywood, aluminum tubes, metal washers, paper spoke prints provided on plans.

shown with spars and leading and trailing edges for reference. The wings are joined with 1¾-inch dihedral on each wingtip. This amount of dihedral aids in tight turns required when flying in an enclosed gymnasium space.

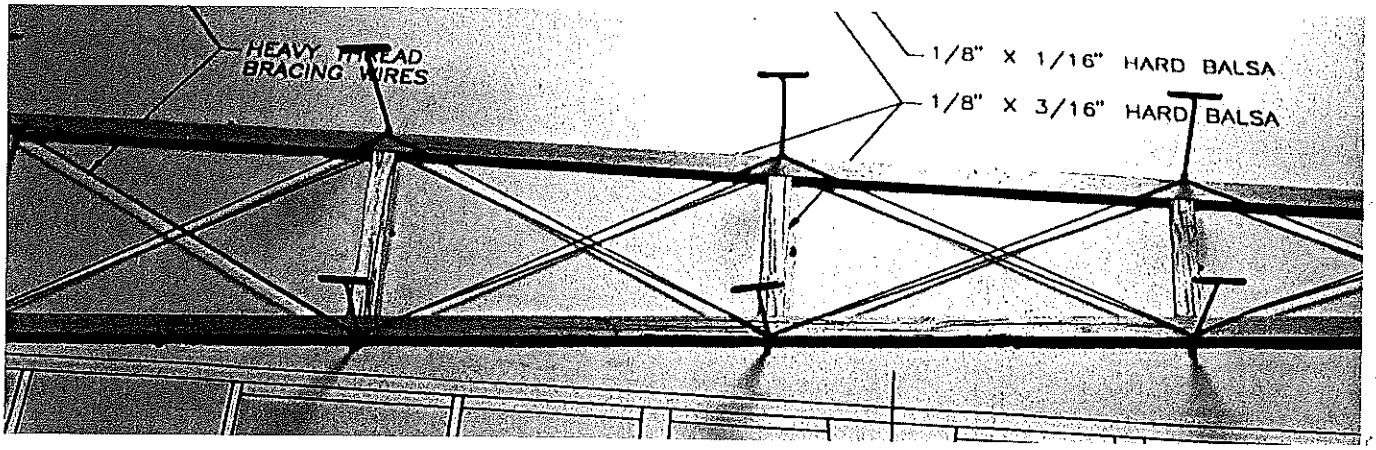
Cover the wing center-section with heavy paper using a light application of yellow carpenter's glue.

Fuselage: Patterns of the fuselage parts are provided on the drawing plans. Assemble the 1/16 balsa sides. The wire-braced open framework on the rear of the fuselage is simulated with heavy thread. Ken Johnson showed me a clever way to apply the thread bracing to the fuselage. Place T pins above and below each vertical brace. Glue the thread to a starting point, then loop the thread around each T pin. Glue the thread in place.

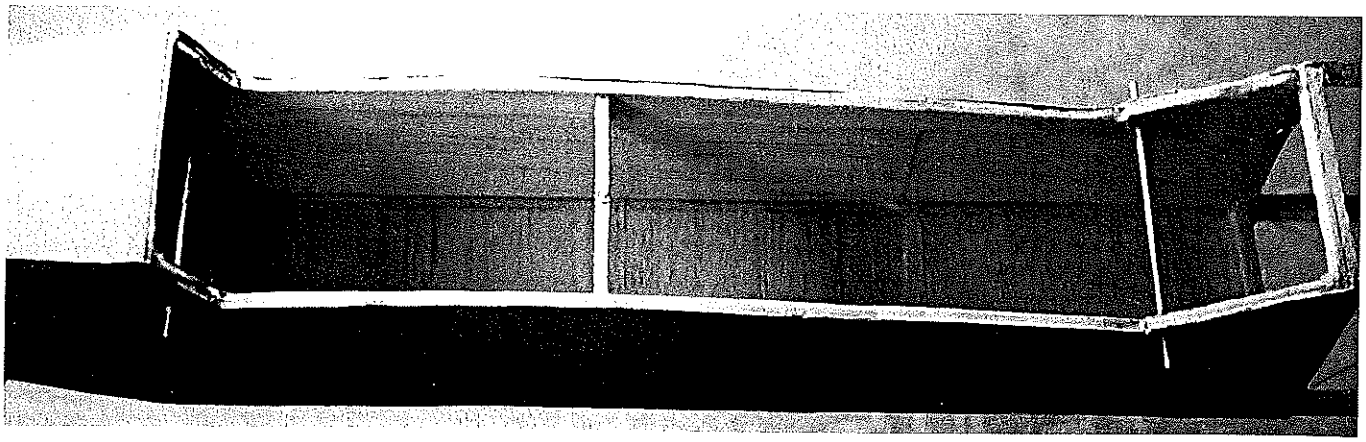
The inverted fuselage can be assembled on the plan top view to ensure proper alignment. Install the top and bottom 1/16 balsa corner strips. Glue on the 1/8 balsa stabilizer mounts. Use the loops that went around the T pins to mount the top and bottom bracing thread. Attach the aluminum rudder hinge tube to the rear of the fuselage with glue and thread. Install the 1/16 balsa front fuselage doublers.

Cover the fuselage front with heavy paper using a light application of yellow carpenter's glue. Drill holes in the fuselage for aluminum wing and landing-gear mounting tubes. Center and glue the aluminum wing and landing-gear mounting tubes in place. Brace the landing-gear mounting tube with scrap balsa and glue. Bend and cut the left and right 1/16-inch-diameter piano-wire landing gear.

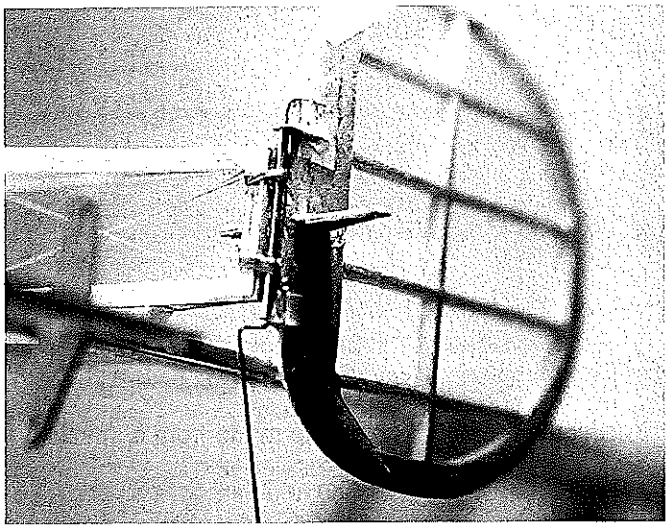
Build the cockpit module, and dry-fit the wing, fuselage, and cockpit module. Make any adjustments with sandpaper until a good fit is achieved. Cover the cockpit module with heavy paper using a light application of yellow carpenter's glue. Center and



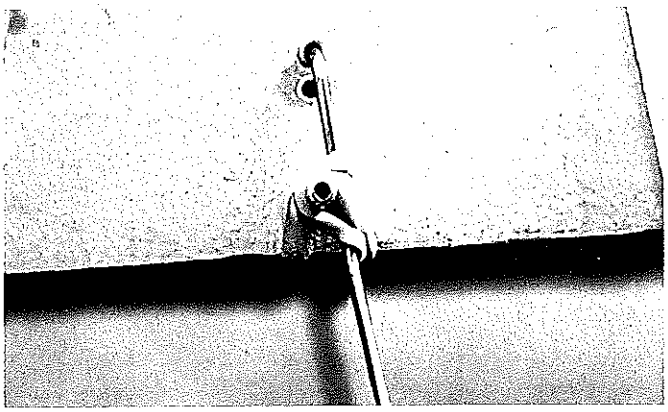
T pins are placed above, below each vertical fuselage brace. Thread is glued to starting point then looped around each pin and glued.



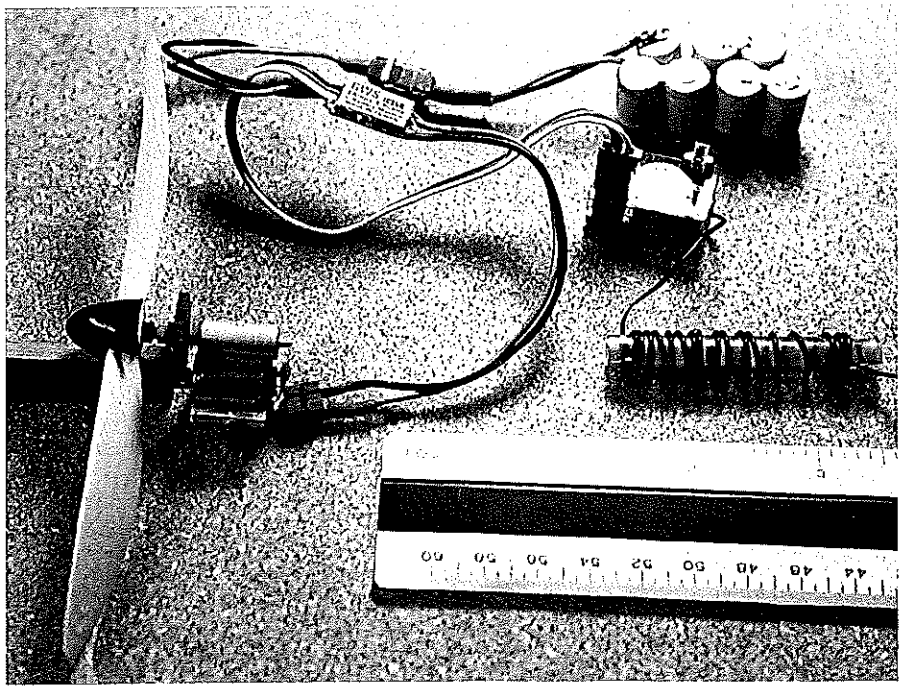
The forward fuselage section with the wing removed shows the aluminum mounting tubes and the radio-gear area.



Notice that the tail-wheel wire serves double duty as the hinge-pin wire as well. This is ingenious!



The left and right swing-arm landing gears pivot independently in an aluminum tube. Swing is limited by a rubber band.



This is the scratch-built ball-bearing gearbox and motor, GWS ICS50 2-amp speed control, batteries, and antenna. The B2 7.2-volt motor is available from Watt-Age.

glue the cockpit module to the wing.

Wheels: You can fabricate wheels using 1¾-inch-outside-diameter O-rings from the hardware store, aluminum tubes, steel washers, hard 1/16 balsa plywood, and spoke prints from the plans. The wheels can be mounted on the 1/16-inch-diameter piano wire with spacer washers and thick cyanoacrylate glue. You must take care to keep the wheel bearings dry.

Rudder: Build the rudder using 1/8 balsa. Bend the bottom of the steering tail-wheel wire. The tail wheel can be secured on the 1/32-inch-diameter piano wire with a right-angle bend at the end of the wire. Insert the wire into the rudder hinges and hinge tube. Bend the wire top to fit in the rudder. Glue the hinges into the rudder. Apply heavy paper using a light application of yellow carpenter's glue to give strength to the front of the rudder.

Stabilizer and Elevator: Assemble the stabilizer and elevator with 1/8 balsa strip. Mount the stabilizer to the fuselage with glue.

Finishing: Because of its light weight, availability, and strength, I used yellow Reynolds Plastic Wrap and a glue stick to cover the wing, rudder, and stabilizer. Apply RC/56 glue to the bottom of the wing ribs to prevent covering from coming loose. To avoid damage, use heat sparingly when shrinking the covering. Sew figure-eight thread and glue elevator hinges, being careful to leave the hinge centers dry. Install the 1/32 plywood rudder and elevator horns.

Pilot: Carve a featureless balsa bust. Draw goggles and a mustache on heavy paper, and cut them out. Glue the paper parts on 1/32 wet balsa, then glue them on the bust. Glue on a balsa nose. Paint the goggles sky blue with a glint of white in the upper left corners of the lenses. Paint on a leather flying cap and coat. Glue the pilot in the cockpit. Voilà!

Flying: I use the reliable GWS 5-gram, four-channel GWR-4P FM receiver; 5-gram GWS Pico standard servos; and GWS 2-amp speed control in my airplane. I like to use two-pin Deans gold-plated connectors on my battery pack and radio-gear connections.

I charge my conventional 100 mA batteries with a Hobby People Activator

Cessna No. 1

Type: RC Electric Sport Scale

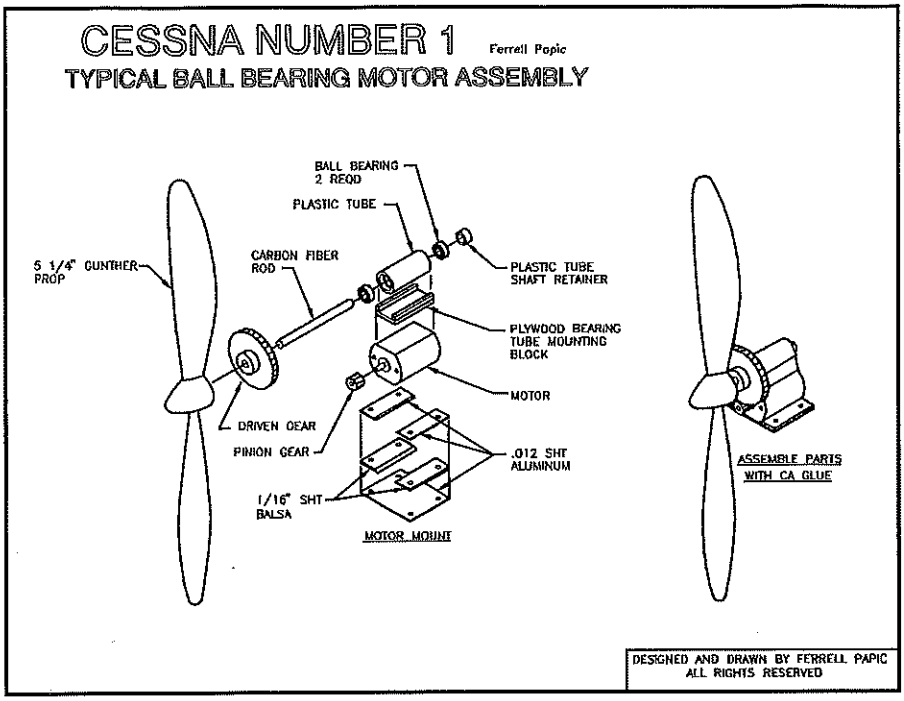
Wingspan: 32½ inches

Motor: GWS Lite Stik geared

Flying weight: 6 ounces

Construction: Balsa sheets and sticks

Covering/finish: Colored Saran Wrap



pulse battery charger at .2 amps. To prevent battery explosion, I must charge my Lithium-Ion batteries with a dedicated voltage cutoff battery charger, such as a 7.2-volt Lithium-Ion camcorder battery charger.

(Editor's note: If you are going to use Lithium-Ion cells, be sure to use a charger specifically designed for them; improper charge or discharge procedures can result in an explosion and/or fire.)

Adjust the battery and radio-gear location in the fuselage so that the correct center of gravity at the wing main spar is achieved. Visually check the underside of the wing center at arm's length for correct left and right symmetry. Symmetry corrections can be made with heat and gentle persuasion. Check all servos in the airplane for reversed controls. Reversed controls can usually be corrected at the transmitter. Some small Electronic Speed Controls require plugging and unplugging battery connectors to get them to operate.

Outdoor flying is best done in no wind or moderate wind conditions. Indoor flying is best done anytime! MA

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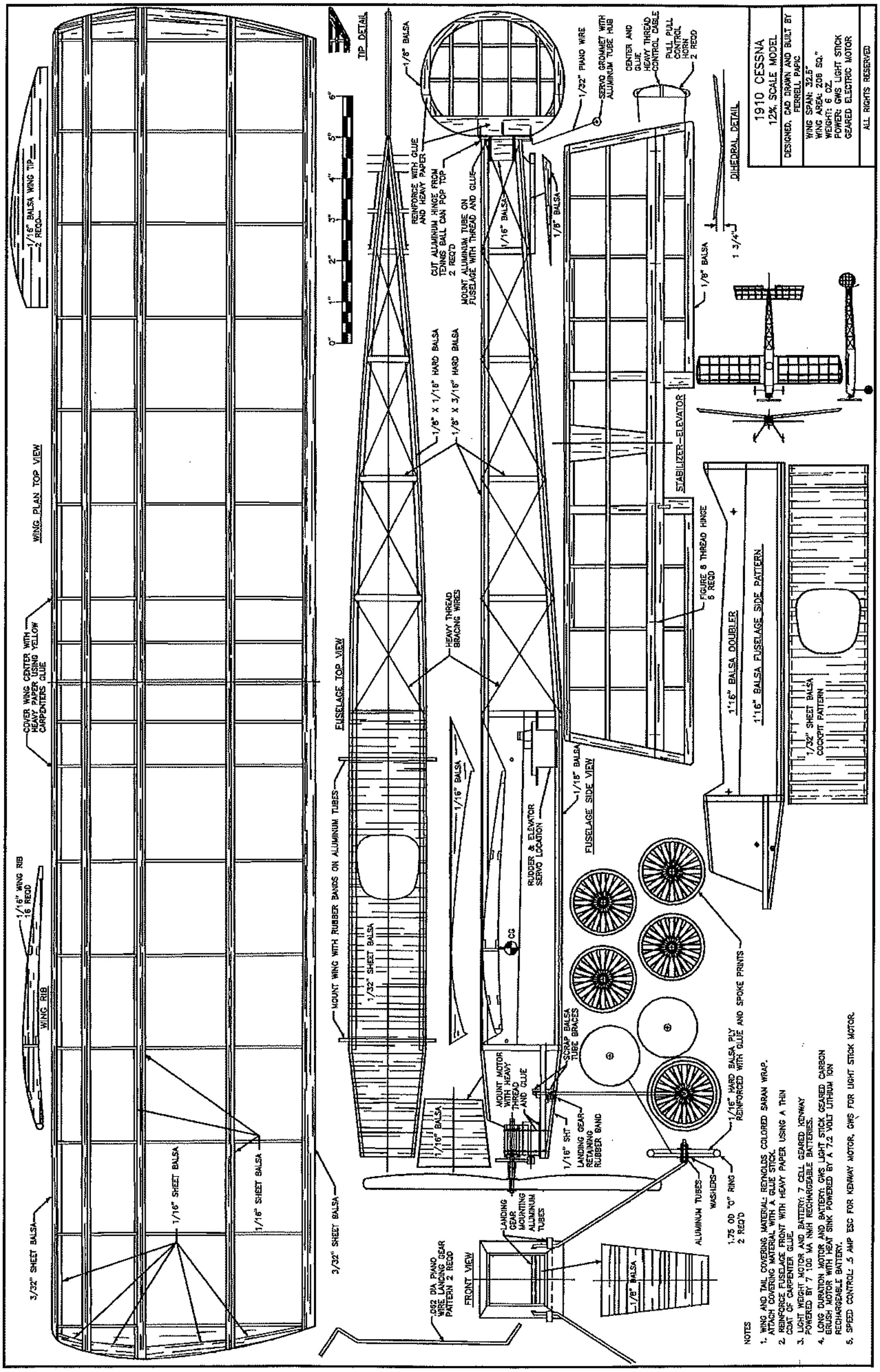
300 W. Lincoln #82
Orange CA 92865

Full-Size Plans Available—see page 175



CESSNA NUMBER 1

Ferrell Papic